

In the Claims:

Claims 1-32 (Cancelled).

33. (New) A method of forming a catheter balloon, comprising:

- a) providing a balloon formed of a material having a proximal end, a distal end, an expandable section, a proximal shaft section between the proximal end and the expandable section, a distal shaft section between the expandable section and the distal end, and an outer surface;
- b) placing the balloon on a mandrel having a longitudinal axis and rotating the mandrel around the mandrel longitudinal axis to rotate the balloon thereon; and
- c) positioning a material removal device in contact with an outer surface of at least a section of the rotating balloon to thereby remove balloon material from a portion of at least one of the proximal shaft section and the distal shaft section to form a shaft section having a first portion with a substantially uniform first diameter and a second portion with a substantially uniform second diameter, different than the first diameter.

34. (New) The method of claim 33 further comprising:

causing relative longitudinal displacement between the balloon and the material removal device to remove balloon material from a length of the proximal shaft section.

35. (New) The method of claim 33 further comprising:

causing relative longitudinal displacement between the balloon and the material removal device to remove balloon material from a length of the distal shaft section.

36. (New) The method of claim 33 wherein the material removal device is a rotating disk having an abrasive surface with a first grain value and a step comprises abrasively removing the material.

37. (New) The method of claim 33 wherein the material removal device comprises at least one rotating grinding wheel and a step comprises grinding the at least one section of the rotating tube to remove the material

38. (New) The method of claim 33 wherein the material removal device is a chemical solvent and (c) comprises causing a chemical reaction in an outer surface of the balloon material to remove the balloon material.

39. (New) The method of claim 33 further comprising after (c) cleaning the balloon of all material deposits resulting from the material removal.

40. (New) The method of claim 33 wherein the shaft section comprises a tapered transition between the first diameter portion and the second diameter portion of the shaft section.

41. (New) The method of claim 42 including forming two or more tapered transitions.

42. (New) A method of forming a thin walled polymeric tube for use as a medical device component, comprising:

a) providing a polymeric tube formed of a material having a proximal end, a distal end, at least one lumen therethrough, and an outer surface;

b) placing the polymeric tube on a mandrel having a longitudinal axis and rotating the mandrel and the polymeric tube thereon around the mandrel longitudinal axis; and

c) positioning a material removal device in contact with an outer surface of at least a section of the polymeric tube to thereby remove polymeric material from a portion of at least one of the proximal end and the distal end to form a section having a first portion with a substantially uniform first diameter and a second portion with a substantially uniform second diameter, different than the first diameter.

43. (New) A system for removing material from a polymer tube to form a medical device component having a shaft section having a first portion with a substantially uniform first diameter and a second portion with a substantially uniform second diameter, different than the first diameter, said system comprising:

- a) a mandrel having a longitudinal axis, a first end and a second end;
- b) a polymer tube having a longitudinal axis, a first end, a second end and a lumen therethrough, disposed about the second end of the mandrel;
- c) a material removal device configured to remove material from an end of the polymeric tube; and
- d) a turning tool secured to the material removal device and configured to move the material removal device between first and second locations relative to the mandrel such that material forming the polymer tube may be removed by the material removal device to form the first and second portions of the shaft section.

44. (New) The system of claim 43 wherein the material removal device is a rotating abrasive surface.

45. (New) The system of claim 43 wherein the material removal device is a grinding wheel.

46. (New) The system of claim 43 wherein the material removal device is a chemical solvent.

47. (New) A catheter balloon, comprising an expandable section having a wall thickness, a proximal shaft section having a wall thickness, and a distal shaft section, having a wall thickness, wherein the wall thickness of at least a portion of the proximal and distal shaft sections are greater than the expandable section wall thickness and at least one of the proximal shaft section and the distal shaft section have a shaft section having a first portion with a substantially uniform first diameter and a second portion with a substantially uniform second diameter, different than the first diameter.

48. (New) A catheter balloon comprising:

a proximal shaft section, a distal shaft section and an expandable section therebetween, at least a portion of at least one of the proximal shaft section and the distal shaft section having a first wall thickness and a second wall thickness, wherein the first wall thickness is less than the second wall thickness, at least a portion of the first wall thickness being provided by removing material from the at least a portion of at least one of the proximal shaft section and the distal shaft section by grinding.